SECTION 9-14, EROSION CONTROL AND ROADSIDE PLANTING
December 2, 2002

This section is replaced in its entirety as follows:

9-14.1 Soil

9-14.1(1) Topsoil Type A
Topsoil Type A shall be as specified in the Special Provisions.

9-14.1(2) Topsoil Type B
Topsoil Type B shall be native topsoil taken from within the project limits either from the area where roadway excavation is to be performed or from strippings from borrow, pit, or quarry sites, or from other designated sources. The general limits of the material to be utilized for topsoil will be indicated in the Plans or in the Special Provisions. The Engineer will make the final determination of the areas where the most suitable material exists within these general limits. The Contractor shall reserve this material for the specified use. Material for Topsoil Type B shall not be taken from a depth greater than 1 foot from the existing ground unless otherwise designated by the Engineer.

In the production of Topsoil Type B, all vegetative matter, less than 4 feet in height, shall become a part of the topsoil. Prior to topsoil removal, the Contractor shall reduce the native vegetation to a height not exceeding 1 foot. Noxious weeds, as designated by authorized State and County officials, shall not be incorporated in the topsoil, and shall be removed and disposed of as designated elsewhere or as approved by the Engineer.

9-14.1(3) Topsoil Type C
Topsoil Type C shall be native topsoil meeting the requirements of Topsoil Type B but obtained from a source provided by the Contractor outside of the Contracting Agency owned right of way.

9-14.2 Seed
Grasses, legumes, or cover crop seed of the type specified shall conform to the standards for "Certified" grade seed or better as outlined by the State of Washington Department of Agriculture "Rules for Seed Certification," latest edition. Seed shall be furnished in standard containers on which shall be shown the following information:

(1) Common and botanical names of seed,
(2) Lot number,
(3) Net weight,
(4) Percentage of purity,
(5) Percentage of germination (in case of legumes percentage of germination to include hard seed), and Percentage of weed seed content and inert material clearly marked for each kind of seed in accordance with applicable State and Federal laws.

All seed installers must have a business license issued by the Washington State Department of Licensing with a "seed dealer" endorsement. Upon request, the

contractor shall furnish the Engineer with copies of the applicable licenses and endorsements.

Upon request, the Contractor shall furnish to the Engineer duplicate copies of a statement signed by the vendor certifying that each lot of seed has been tested by a recognized seed testing laboratory within six months before the date of delivery on the project. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be accepted.

9-14.3 Fertilizer

Fertilizer shall be a standard commercial grade of organic or inorganic fertilizer of the kind and quality specified. It may be separate or in a mixture containing the percentage of total nitrogen, available phosphoric acid, and water-soluble potash in the amounts specified. All fertilizers shall be furnished in standard unopened containers with weight, name of plant nutrients, and manufacturer's guaranteed statement of analysis clearly marked, all in accordance with State and Federal laws.

Fertilizer shall be supplied in one of the following forms:

(1) A dry free-flowing granular fertilizer, suitable for application by agricultural fertilizer spreader.
(2) A soluble form that will permit complete suspension of insoluble particles in water, suitable for application by power sprayer.
(3) A homogeneous pellet, suitable for application through a ferti-blast gun.
(4) A tablet or other form of controlled release with a minimum of a 6 month release period.

9-14.4 Mulch and Amendments

All amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's guaranteed chemical analysis and name. In lieu of containers, amendments may be furnished in bulk. A certificate from the manufacturer or supplier indicating the above information shall accompany each delivery. Compost and other organic amendments shall be accompanied with all applicable health certificates and permits.

9-14.4(1) Straw

All straw mulch material shall be in an air dried condition free of noxious weeds and other materials detrimental to plant life. Straw mulch so provided shall be suitable for spreading with mulch blower equipment.

9-14.4(2) Wood Cellulose Fiber

Fiber shall be produced from natural or recycled (pulp) fiber, such as wood chips or similar wood materials, or from newsprint, corrugated cardboard, or a combination of these processed materials. The fibers shall not contain any rock, metal, or plastic. It shall be treated with a nontoxic green dye non toxic to plant or animal life to facilitate inspection of the placement of the material. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material will become uniformly suspended to form a homogenous slurry. When hydraulically sprayed on the ground, the material shall allow the absorption and percolation of moisture.

During the request for approval of the material source process, a letter of certification shall be submitted which certifies that the product contains less than 250 parts per million boron, and shall be otherwise nontoxic to plant or animal life. The organic matter content shall be at least 90 percent on an oven-dry basis as determined by ASTM D 586. The moisture content shall be no more than 15 percent as determined by oven dried weight.

Each package of the cellulose fiber shall be marked by the manufacturer to show the dried weight.

9-14.4(3) Bark or Wood Chips

Bark or wood chip mulch shall be derived from Douglas fir, pine, or hemlock species. It shall be ground so that a minimum of 95 percent of the material will pass through a 1½-inch sieve and no more than 55 percent, by loose volume, will pass through a U.S. No. 4 sieve. The mulch shall not contain resin, tannin, or other compounds in quantities that would be detrimental to plant life.

9-14.4(4) Sawdust

Sawdust mulch shall be free of chips, chunks, and large splinters, and shall not contain resin, tannin, or other compounds in quantities that would be detrimental to plant life.

9-14.4(5) Lime

Agriculture lime shall be of standard manufacture, flour grade, meeting the requirements of ASTM C-602.

9-14.4(6) Gypsum

Gypsum shall consist of Calcium Sulfate (CaSO42H2O) in a pelletized or granular form. 100% shall pass through a U.S. No. 8 sieve.

9-14.4(7) Tackifier

Tackifiers used as a tie-down for seed and mulch shall be applied in quantities sufficient to equal the retention properties of guar when applied at the rate of 60 pounds per acre for slopes less than 2:1 and 120 pounds per acre for slopes greater than 2:1. Tackifer shall contain no growth or germination inhibiting materials nor significantly reduce infiltration rates. Tackifer shall hydrate in water and readily blend with other slurry materials. Tackifer options include:

Type A — Organic tackifier derived from natural organic plant sources.
Type B — Synthetic tackifier having an MSDS sheet that demonstrates to the satisfaction of Engineer that the product is not harmful to aquatic life.

9-14.4(8) Compost

Compost products shall contain composted plant material derived from the aerobic decomposition of recycled plant waste. The composted plant waste shall have a moisture content that has no visible free water or dust produced when handling the material.

Compost shall be stable, mature, decomposed organic solid waste that is the result of the accelerated, aerobic biodegradation and stabilization under controlled conditions. The result is a uniform dark, soil-like appearance.

Compost maturity or stability is the point at which the aerobic biodegradation of the compost has slowed and oxygen consumption and carbon dioxide generation has dropped. Subsequent testing provides consistent results.

Compost production and quality shall comply with the Interim Guidelines for Compost Quality, #94-38 or superseding editions, and amendments, published by the Washington State Department of Ecology. The Interim Guidelines for Compost Quality can be found at the web site http://www.ecy.wa.gov/pubs/94038.pdf.

Compost products shall meet the following physical criteria:

1. Compost material shall be tested in accordance with AASHTO Test Method T87 and T88. 100% of Type 1 Compost shall pass through a 5/8" sieve. 90% of Type 2 Compost shall be larger than 3/8 inch and smaller than 1 inch.

2. The pH range shall be between 5.5 and 8.5 when tested in accordance with WSDOT Test Method 417.

3. Manufactured inert material (plastic, concrete, ceramics, metal, etc.) shall be less than 1 percent on a dry weight or volume basis, whichever provides for the least amount of foreign material.

4. Minimum organic matter shall be 30 percent dry weight basis as determined by loss on ignition. (LOI test)

5. Soluble salt contents shall be less than 4.0 mmhos/cm for areas that receive less than 20 inches of precipitation per year and 6.0 mmhos/cm for areas that receive more than 20 inches of precipitation per year.

6. Type 1 Compost shall score a number 6 or above on the Solvita Compost Maturity Test. Type 2 Compost shall score a 5 or above on the Solvita Compost Maturity Test.

All compost products will be tested within 30 calendar days prior to application by the Contracting Agency with samples taken from the material stockpiled by the supplier for project use. Compost not conforming to the above requirements or taken from a source other than those tested shall be immediately removed from the project and replaced at no cost to the Contracting Agency.

Acceptance of composted products shall be based on the following submittals by the Contractor:

1. A Request for Approval of Material Source.

2. A copy of the Solid Waste Handling Permit issued to the supplier by the Jurisdictional Health Department as per WAC 173-304 (Minimum Functional Standards for Solid Waste Handling).

3. Written verification from the supplier that the material complies with the processes, testing, and standards specified in the Interim Guidelines for Compost Quality.

4. Written verification from the supplier that the compost products originate a minimum of 65 percent by volume from recycled plant waste. A maximum of 35 percent by volume of other approved organic waste and/or biosolids may be substituted for recycled plant waste.

5. A copy of the lab analyses described under Testing Parameters in the Guidelines for Compost Quality. The analyses shall be less than three months old.

6. A list of the feedstock by percentage present in the final compost product.

9-14.5 Erosion Control Blanket

Organic temporary erosion control blanket shall meet the following requirements:

1. Made of natural plant fibers.
2. Have a minimum weight of 8 oz./sq. yd. and a minimum limiting shear stress of 0.45 lb./sq. ft.
3. Netting, if present, shall be biodegradable or photodegradable.

Permanent erosion control blanket shall meet the following requirements:

1. Consist of uv stabilized[1] fibers, filaments, and netting.
2. Have a minimum weight of 8 oz./sq. yd. and a minimum limiting shear stress of 1.5 lb./sq. ft.

[1]uv stability (minimum 80 percent tensile retained) ASTM D4355 (1,000 hour exposure).

9-14.5(3) Clear Plastic Covering

Clear plastic covering shall meet the requirements of the NIST Voluntary Product Standard, PS 17-69, for polyethylene sheeting having a minimum thickness of 6 mils.

9-14.5(4) Geotextile-Encased Check Dam

The geotextile-encased check dam shall be a urethane foam core encased in geotextile material. The minimum length of the unit shall be 7 feet.

The foam core shall be a minimum of 8 inches in height, and have a minimum base width of 16 inches. The geotextile material shall overhang the foam by at least 6 inches at each end, and shall have apron type flaps that extend a minimum of 24 inches on each side of the foam core. The geotextile material shall meet the requirements for silt fence in Section 9-33.

9-14.5(5) Wattles

Wattles shall consist of cylinders of biodegradable plant material such as straw, coir, or wood shavings encased within biodegradable or photodegradable

netting. Netting shall meet the requirements of Section 9-14.5. Rolls shall be at least 6 inches in diameter, unless otherwise specified.

9-14.6 Plant Materials

9-14.6(1) Description

Seedlings are plants grown from cuttings, seeds, or other approved propagation methods. Seedlings do not normally show form characteristic to species generally under three years of age and less than 24 inches in height. Measurement is by height in 3-inch increments or by age and number of times transplanted.

Whips are bareroot, broadleaf trees, generally unbranched and between 2 feet and 6 feet in height. Measurement is by 1-foot height increments.

Broadleaf trees are branched, over 6 feet in height and measured by caliper and/or height.

Coniferous trees are over 2 feet in height and measured in height and occasionally spread.

Shrubs and ground covers begin to show form characteristic to their normal habit of growth and are measured by height and/or spread.

Container sizes may be specified in addition to other measurements, however, the other measurements shall govern.

Cuttings are live plant material without a previously developed root system. Source plants for cuttings shall be dormant when cuttings are taken. All cuts shall be made with a sharp instrument. Written permission shall be obtained from property owners and provided to the Engineer before cuttings are collected. The Contractor shall collect cuttings in accordance with applicable sensitive area ordinances. For cuttings, the requirement to be nursery grown or held in nursery conditions does not apply. Cuttings include the following forms:

Live branch cuttings shall have flexible top growth with terminal buds and may have side branches. The rooting end shall be cut at an approximate 45 degree angle.

Live stake cuttings shall have a straight top cut immediately above a bud. The lower, rooting end shall be cut at an approximate 45-degree angle. Live stakes are cut from one to two year old wood.

Live pole cuttings shall have a minimum 2-inch diameter and no more than three branches which shall be pruned back to the first bud from the main stem.

Rhizomes shall be a prostrate or subterranean stem, usually rooting at the nodes and becoming erect at the apex. Rhizomes shall have a minimum of two growth points.

Tubers shall be a thickened and short subterranean branch having numerous buds or eyes.

9-14.6(2) Quality

All plant material furnished shall meet the grades established by the latest edition of the American Standard for Nursery Stock, shall conform to the size and acceptable conditions as listed in the contract, and shall be free of all foreign plant material.

All plant material shall comply with State and Federal laws with respect to inspection for plant diseases and insect infestation.

Live woody or herbaceous plant material, except cuttings, rhizomes, and tubers, shall be vigorous, well formed, with well developed fibrous root systems, free from dead branches, lichens, and from damage caused by an absence or an excess of heat or moisture, insects, disease, mechanical or other causes detrimental to good plant development. Evergreen plants shall be well foliated and of good color. Deciduous trees which have solitary leaders shall have only the lateral branches thinned by pruning. All conifer trees shall have only one leader (growing apex) and one terminal bud, and shall not be sheared or shaped. Trees having a damaged or missing leader, multiple leaders, or Y-crotches shall be rejected.

Root balls of plant materials shall be solidly held together by a fibrous root system and shall be composed only of the soil in which the plant has been actually growing. The ball shall be securely wrapped with jute burlap or other packing material not injurious to the plant life. Root balls shall be free of weed or foreign plant growth.

Plant materials shall be nursery grown stock. Plant material, with the exception of cuttings, gathered from native stands shall be held under nursery conditions for a minimum of one full growing season, shall be free of all foreign plant material, and meet all of the requirements of these Specifications, the Plans, and the Special Provisions.

Container grown plants must be plants transplanted into a container and grown in that container sufficiently long for new fibrous roots to have developed so that the root mass will retain its shape and hold together when removed from the container. Plant material which is root bound, as determined by the Engineer, shall be rejected.

Container sizes for plant material of a larger grade than provided for in the container grown specifications of the American Standard for Nursery Stock (ASNS) shall be determined by the volume of the root ball specified in the ASNS for the same size plant material.

All bare root plant materials shall have a heavy fibrous root system. All plants must be dormant at the time of planting.

Average height to spread proportions and branching shall be in accordance with the applicable sections, illustrations, and accompanying notes of the American Standard for Nursery Stock.

Plants, which have been determined by the Engineer to have suffered damage as the result of girdling of the roots, stem, or a major branch; have deformities of the stem or major branches; have a lack of symmetry; have dead or defoliated tops or branches; or have any defect, injury, or condition which renders the plant unsuitable for its intended use, shall be rejected.

Plants that are grafted shall have roots of the same genus as the specified plant.

9-14.6(3) Handling and Shipping

Handling and shipping shall be done in a manner that is not detrimental to the plants.

The nursery shall furnish a notice of shipment in triplicate at the time of shipment of each truck load or other lot of plant material. The original copy shall be delivered to the Project Engineer, the duplicate to the consignee and the triplicate shall accompany the shipment to be furnished to the Inspector at the job site. The notice shall contain the following information:

1. Name of shipper.
2. Date of shipment.
3. Name of commodity. (Including all names as specified in the contract.)
4. Consignee and delivery point.
5. State contract number.
6. Point from which shipped.
7. Quantity contained.
8. Certificate of Grade. (Statement that material conforms to the specifications.)
9. Size. (Height, runner length, caliper, etc. as required.)
10. Statement of root pruning. (Date pruned and size of pruning.)
11. Signature of shipper by authorized representative.

To acclimate plant materials to Northwest conditions, all plant materials used on a project shall be grown continuously outdoors north of the 42nd Latitude (Oregon-California border) from not later than August 1 of the year prior to the time of planting.

All container grown plants shall be handled by the container.

All balled and burlapped plants shall be handled by the ball.

Plant material shall be packed for shipment in accordance with prevailing practice for the type of plant being shipped, and shall be protected at all times against drying, sun, wind, heat, freezing, and similar detrimental conditions both during shipment and during related handling. Where necessary, plant material shall be temporarily heeled in. When transported in closed vehicles, plants shall receive adequate ventilation to prevent sweating. When transported in open vehicles, plants shall be protected by tarpaulins or other suitable cover material. Antidesiccant material shall be applied before shipment.

9-14.6(4) Tagging

Plants delivered as a single unit of 25 or less of the same size, species, and variety, shall be clearly marked and tagged. Plants delivered in large quantities of more than 25 must be segregated as to variety, grade, and size; and one plant in each 25, or fraction thereof, of each variety, grade, and size shall be tagged.

9-14.6(5) Inspection

The Contracting Agency will make an inspection of plant material at the source when requested by the Engineer. However, such approval shall not be considered as final acceptance for payment. The Contractor shall notify the Engineer, not less than 48 hours in advance, of plant material delivery to the project.

9-14.6(6) Substitution of Plants

No substitution of plant material, species or variety, will be permitted unless evidence is submitted in writing to the Engineer that a specified plant cannot be obtained and has been unobtainable since the award of the contract. If substitution is permitted, it can be made only with written approval by the Engineer. The nearest variety, size, and grade, as approved by the Engineer, shall then be furnished.

Container or balled and burlapped plant material may be substituted for bare root plant material. Container grown plant material may be substituted for balled and burlapped plant materials. Container size shall be determined by the volume of the root ball that is specified. These substitutions shall be approved by the Engineer and be at no cost to the Contracting Agency.

9-14.6(7) Temporary Storage

Plants stored under temporary conditions shall be the responsibility of the Contractor.

Plants stored on the project shall be protected at all times from extreme weather conditions by insulating the root balls with sawdust, soil, or other approved material and shall be kept moist at all times.

Cuttings to be stored for periods longer than one week shall be taken during the months of November and December. Cuttings to be stored for later installation shall be bundled, laid horizontally, and completely buried under 6 inches of soil or placed in cold storage at a temperature of 34 F and 90% humidity. Cuttings that are not planted within 24 hours of cutting shall be soaked in water for 24 hours prior to planting. Cuttings taken when the temperature is higher than 50^{o} F shall not be stored for later use.

Cuttings shall continually be shaded and protected from wind. Cuttings must be protected from drying at all times and shall be heeled into moist soil or placed in water if not installed within 8 hours of cutting.

9-14.6(8) Sod

The available grass mixtures on the current market shall be submitted to the Engineer for selection and approval.

The sod shall be field grown one calendar year or older, have a well developed root structure, and be free of all weeds, disease, and insect damage.

Prior to cutting, the sod shall be green, in an active and vigorous state of growth, and mowed to a height not exceeding 1 inch.

The sod shall be cut with a minimum of 1 inch of soil adhering.

9-14.7 Stakes, Guys, and Wrapping

Stakes shall be installed as shown in the Plans.

Commercial plant ties may be used in lieu of hose and wire guying upon approval of the Engineer. The minimum size of wire used for guying shall be 14 gage, soft drawn.

Hose for guying shall be nylon, rubber, or reinforced plastic and shall have an inside diameter of at least 1/2 inch.

Tree wrap shall be a crinkled waterproof paper weighing not less than 4.0 pounds per 100 square feet and shall be made up of two sheets cemented together with asphalt.